

This Page Is Inserted by IFW Operations
and is not a part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

**As rescanning documents *will not* correct images,
please do not report the images to the
Image Problem Mailbox.**

(12) UK Patent Application (19) GB (11) 2 220 026 (13) A

(43) Date of A publication 28.12.1989

(21) Application No 8815126.1

(22) Date of filing 24.06.1988

(71) Applicant

Rolls-Royce plc

(Incorporated in the United Kingdom)

65 Buckingham Gate, London, SW1E 6AT,
United Kingdom

(72) Inventor

Robert Bruce Stuart

(74) Agent and/or Address for Service

K Leaman and V J Bird

Rolls-Royce plc, Patents Department, P O Box 31,
Derby, DE2 8BJ, United Kingdom

(51) INT CL⁴

E05B 65/46

(52) UK CL (Edition J)

E2A AAMB A100 A106 A191 A409

U1S S1212

(56) Documents cited

GB 2095322 A US 4272138 A

(58) Field of search

UK CL (Edition J) E2A

INT CL⁴ E05B, E05C

(54) Safety mechanism for cabinets

(57) This invention provides a safety mechanism for a cabinet 10 having more than one drawer 16. The mechanism comprises a rod 18 which is split into as many portions 20, 22, 24 as there are drawers, a pair of endstops 26, 28 between which said rod is positioned and a cam 30 for each drawer. The movement of any one drawer to its open position acts to insert its associated cam 30 in a gap G between said endstops. Only one cam may be inserted in said gap G at any one time and hence only one drawer 16 may be opened at any one time.

Fig.2.

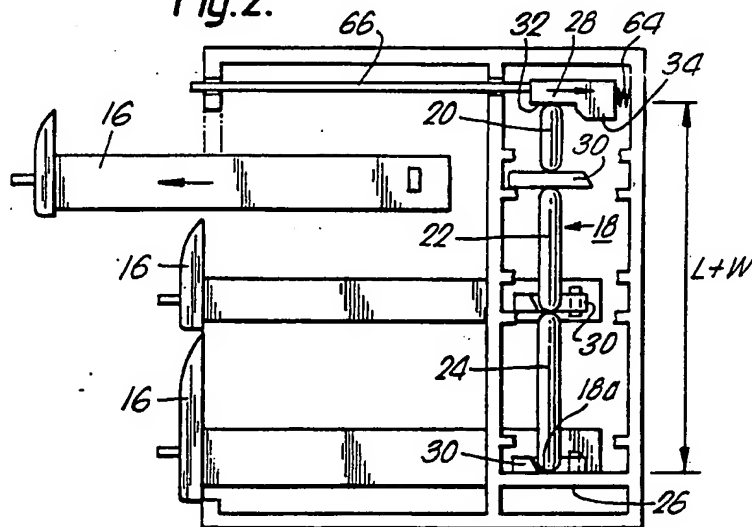


Fig. 1.

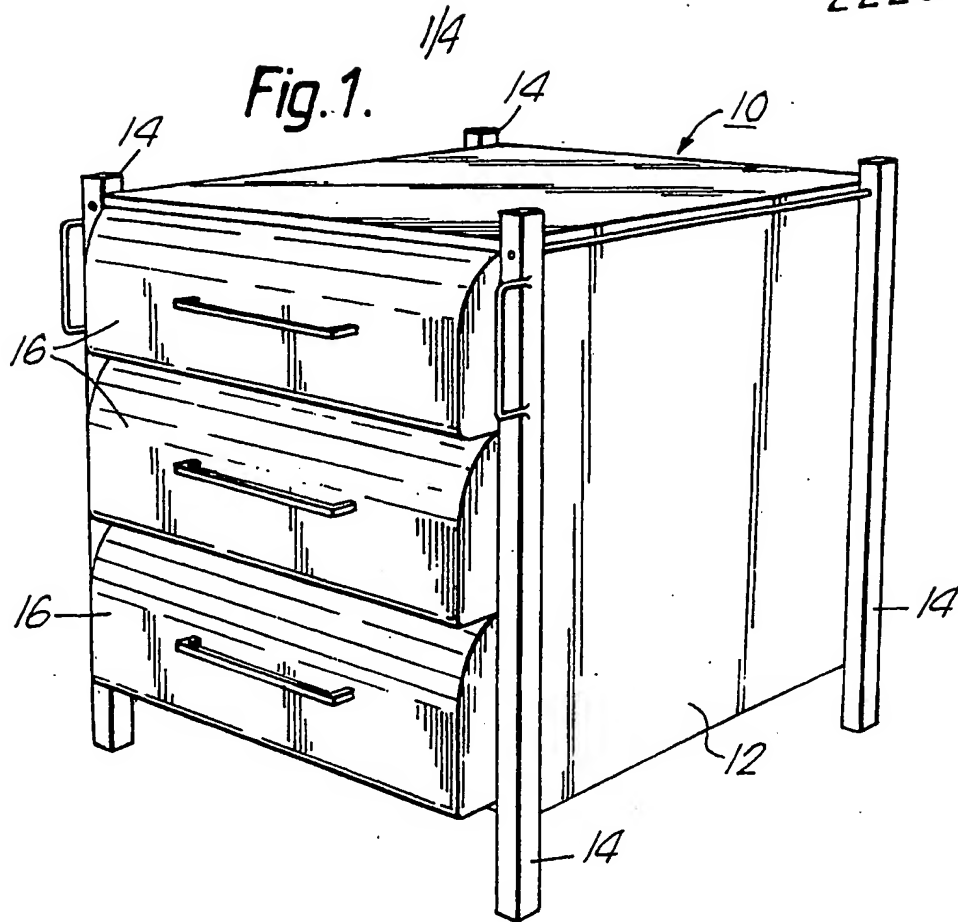


Fig. 2.

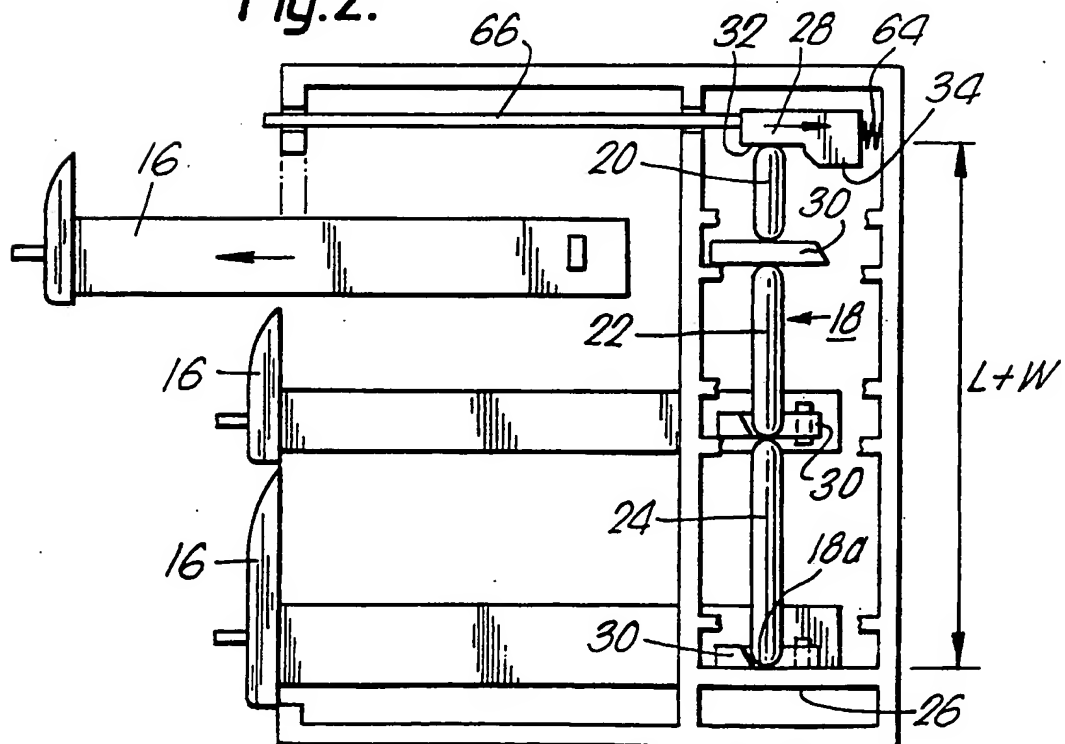


Fig.3.

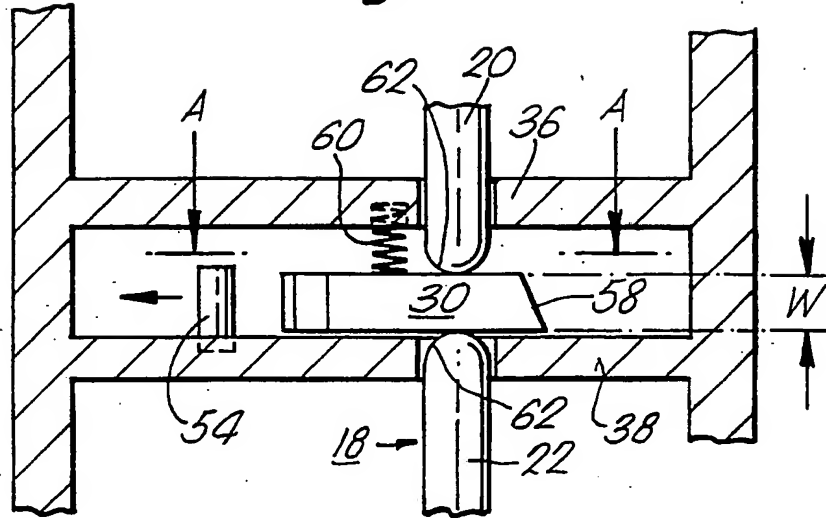
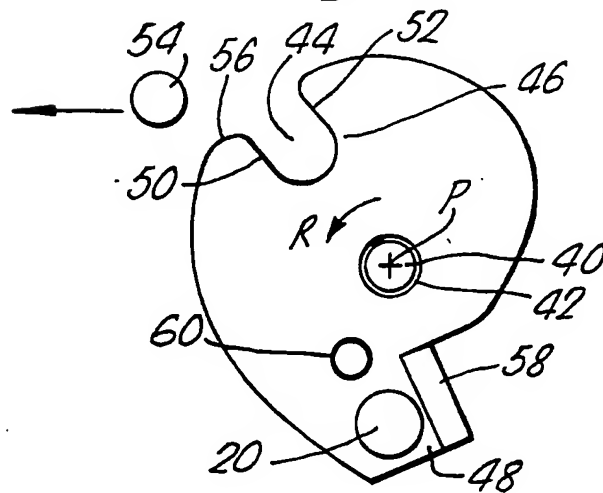


Fig.4.



- 1 -

SAFETY MECHANISM FOR CABINETS

This invention relates to a lock mechanism and is particularly relevant to a lock mechanism of a multi drawer cabinet which prevents more than one drawer being opened at any one time.

One problem associated with some presently known multi drawer cabinets, such as for example filing cabinets, is that it is often possible to open two or more drawers together which may result in the cabinet tipping over if a heavy load is situated in the drawers. Some cabinets are provided with a safety mechanism which aims to prevent more than one drawer being opened at any one time, however, it has been found that such mechanisms are easily fooled by careful or accidental manipulation of the opening sequence. Further to this some safety mechanisms lack the robustness required for industrial applications.

It is an object of the present invention to provide a safety mechanism suitable for any multi drawer cabinet which prevents more than one drawer being opened at any one time, which cannot be fooled and which is robust and easy to operate. It is a further object of the present invention to provide a locking mechanism for the above mentioned safety mechanism which allows all the drawers in the cabinet to be locked in the closed position.

The present invention will now be more particularly described by way of example only with reference to the accompanying drawings in which:

Figure 1 is a perspective view of a multi drawer cabinet incorporating the present invention.

Figure 2 is a cross sectional view of the cabinet shown in Figure 1 and illustrates the present invention diagrammatically.

Figures 3 and 5 are detailed views of one portion of the locking mechanism shown in Figure 2 in their drawer open and drawer closed positions respectively.

Figures 4 and 6 are views in the direction of arrows A-A and B-B in Figures 3 and 5 respectively.

Figure 7 is a second cross sectional view of the cabinet shown in Figure 1.

Referring to Figure 1, a cabinet shown at 10 generally comprises a body 12 mounted on legs 14 and a plurality of drawers three of which are shown at 16. The safety mechanism best seen in Figures 2 to 7 may be included in one of the legs of the cabinet 10 or at any point along the side of said cabinet 10.

Turning now to the drawings in general but particularly to Figures 2 and 7, the safety mechanism comprises a rod 18 of length L which is split into as many separable portions 20, 22, 24 as there are drawers in the cabinet 10, a pair of mutually confronting first and second endstops 26, 28 positioned at a first and a second end 18a, 18b respectively of the rod 18 and an actuator cam 30 for each drawer 16 in said cabinet.

The first endstop 26 is fixed in position relative to said rod 18 whilst the second endstop is movable between a first position in which a first face 32 confronts said first endstop 26 and a second position in which a second face 34 confronts said first endstop 26. The first face 32 of the second endstop 28 is spaced from the first endstop 26 by a predetermined amount which is greater than the overall length L of the rod 18, thereby to define a gap G whilst the second face is spaced from said first endstop 26 by a predetermined amount which is substantially the same as the overall length L of the rod 18. Each cam 30 has a predetermined width W and is positioned adjacent one end of the portion of rod 20, 22, 24 which is associated with the same drawer 16 as itself. Each cam 30 is individually movable between a first position in which it acts to fill the gap G and allow its associated drawer 16 to be opened and a second position in which it is prevented from entering said gap G and prevents said drawer being opened.

It will be appreciated that if the width W of each cam 30 is greater than half the width of the gap G then only one cam is insertable in said gap G at any one time, and hence only one drawer may be opened at any one time.

Referring now particularly to Figures 3 to 6, each cam 30 is situated between a pair of sideplates 36, 38 and located relative thereto by a dowel 40 which extends through a hole 42 provided in the cam 30. The hole 42 is positioned between a first and a second end 44, 46 respectively of the cam and acts in conjunction with the dowel 40 to define a pivot point P about which the cam pivots between its first position, shown in Figures 3 and 4 and its second position, shown in Figures 5 and 6. Each cam 30 has a width W and is provided at a first end 46 with a slot 44 and at a second end 48 with a portion which is insertable in the gap G. The slot 44 extends generally towards the pivot point P and is provided with a first and a second side 50, 52 respectively. The first side 50 is in communication with a feature 54 provided on its associated drawer 16 as the drawer 16 is moved from its closed to its open position until the second end of the cam 48 is inserted in the gap G and thereafter being out of communication with said feature 54. When the drawer 16 is moved from its open position towards its closed position, the feature passes over the upper end 56 of the first side 50 and communicates with the longer second side 52 which moves with said feature 54 for at least a portion of its travel thereby to pivot the cam 30 about its pivot point P and extract the second end 48 of said cam 30 from the gap G.

Each cam 30 is provided with two further features, the first of which is a sloping surface 58 over which a portion of rod 20, 22, 24 travels as the cam 30 moves between its first and second position and the second of which is a means for resisting rotation of the cam 30, such as for example a spring 60. Each portion of rod 20, 22, 24 is provided with a profiled end 62 which aids the insertion of the cam 30 therebetween.

Referring now to Figures 2 and 7, it will be appreciated that in order to insert a cam 30 in the gap G it will be necessary to have the second endstop 28 positioned such that its first face 32 confronts the first endstop 26 and the rod 18 is positioned therebetween and that the gap G is of at least the same magnitude as the width W but less than $2 \times W$. In the embodiment illustrated the gap G is of substantially the same magnitude as the width W. It will be further appreciated that if the second endstop 28 is positioned such that its second face 34 confronts the first endstop 26 and the rod 18 is positioned therebetween then no gap G is evident and hence no cams 30 may be moved to their first position and effectively all the drawers 16 are locked in their closed position as shown in Figure 7. A means, such as for example a spring 64 may be provided to bias the second endstop 28 into a position in which its second face 34 confronts the first endstop 26. Further to this, a mechanism 66 may be provided to facilitate movement of the second endstop 28 from the front of the cabinet 10.

Claims

1. A safety mechanism for a cabinet of the type which comprises more than one drawer, the mechanism comprising a rod of a predetermined overall length which is split into as many separate portions as there are drawers in said cabinet, each portion being associated with one of said drawers and having a profiled end which abuts its neighbour, a first and a second mutually confronting endstop between which said rod extends the first of said endstops being positioned such that it abuts a first end of said rod and the second of said endstops being spaced from said first by a predetermined amount which is greater than the overall length of said rod thereby to define a gap, one cam having a predetermined width for each drawer, each cam being positioned adjacent one end of each portion of rod and being individually movable between a first position, in which it acts to fill said gap and allow its associated drawer to be opened and a second position, in which it is prevented from entering said gap and prevents said drawer opening, wherein only one cam is insertable in said gap at any one time.

2. A safety mechanism as claimed in claim 1 in which the second endstop is movable between a first position in which it is spaced from the first endstop by a predetermined amount which is greater than the overall length of the rod thereby to define a gap, and a second position in which said second endstop is spaced from said first endstop by a predetermined amount which is substantially the same as the overall length of said rod, thereby to prevent any cam being inserted into the gap.

3. A safety mechanism as claimed in claim 1 or claim 2 in which each drawer is provided with a feature which engages in a slot provided in its associated cam and which acts to move the cam between its first and its second position upon movement of the drawer between its opened and its closed position.

4. A safety mechanism as claimed in claim 3 in which the feature is released from the slot in the cam when the drawer is open and retained in said slot when the drawer is in its closed position.

5. A safety mechanism as claimed in claim 3 or claim 4 in which the cam comprises a flat plate of a predetermined width having said slot provided at a first end, a portion which is insertable in the gap provided at a second end and a pivot point between said ends about which said cam pivots between its first and its second position.

6. A safety mechanism as claimed in claim 5 in which the pivot point comprises a hole in said cam through which a rod is inserted and said cam is rotatable about said rod.

7. A safety mechanism as claimed in claim 5 in which the second end of the cam is provided with a sloping portion over which the profiled end of the associated portion of rod passes as the cam moves between its first and its second position.

8. A safety mechanism as claimed in any one of claims 3 to 7 in which the slot in the cam extends generally towards the pivot point and is provided with a first and a second side, said first side being in communication with the feature on the drawer as the drawer is moved from its closed to its opened position until the second end of cam is inserted in said gap and thereafter being out of communication with said feature.

9. A safety mechanism as claimed in claim 8 in which the feature on the drawer passes over said first side as said drawer is moved from its opened position to its closed position and in which said second side is then in communication with said feature and moves with said feature for at least a portion of its travel thereby to pivot said cam about its pivot point and extract the second end of said cam from said gap.

10. A safety mechanism as claimed in anyone of the preceding claims in which a means is provided to resist movement of the cam.

11. A safety mechanism as claimed in any one of claims 2 to 10 in which the second endstop is provided with a stepped surface having two faces, the first of said faces being spaced from said first endstop by a predetermined amount which is greater than the overall length of the rod thereby to define a gap, and the second face being spaced from said first endstop by a predetermined amount which is substantially the same as the overall length of the rod.

12. A safety mechanism as claimed in claim 11 in which the second endstop is movable between a first position in which its first face confronts the first endstop and the rod is positioned therebetween and a second position in which said second face confronts said first endstop and the rod is positioned therebetween.

13. A safety mechanism substantially as herein described with reference to Figures 1 to 7 of the accompanying drawings.

Amendments to the claims have been filed as follows

1. A safety mechanism for a cabinet of the type which comprises more than one drawer, the mechanism comprising a rod of a predetermined overall length which is split into as many separate portions as there are drawers in said cabinet, each portion being associated with one of said drawers and having a profiled end which abuts its neighbour, a first and a second mutually confronting endstop between which said rod extends the first of said endstops being positioned such that it abuts a first end of said rod and the second of said endstops being spaced from said first by a predetermined amount which is greater than the overall length of said rod thereby to define a gap, one cam having a predetermined width for each drawer, each cam being positioned adjacent one end of each portion of rod and being individually movable between a first position, in which it acts to fill said gap and allow its associated drawer to be opened and a second position, in which it is prevented from entering said gap and prevents said drawer opening, only one cam being insertable in said gap at any one time, in which each drawer is provided with a feature which engages in a slot provided in its associated cam and which acts to move the cam between its first and its second position upon movement of the drawer between its opened and its closed position.

2. A safety mechanism as claimed in claim 1 in which the second endstop is movable between a first position in which it is spaced from the first endstop by a predetermined amount which is greater than the overall length of the rod thereby to define a gap, and a second position in which said second endstop is spaced from said first endstop by a predetermined amount which is

substantially the same as the overall length of said rod, thereby to prevent any cam being inserted into the gap.

3. A safety mechanism as claimed in claim 1 in which the feature is released from the slot in the cam when the drawer is open and retained in said slot when the drawer is in its closed position.

4. A safety mechanism as claimed in claim 1 or claim 3 in which the cam comprises a flat plate of a predetermined width having said slot provided at a first end, a portion which is insertable in the gap provided at a second end and a pivot point between said ends about which said cam pivots between its first and its second position.

5. A safety mechanism as claimed in claim 4 in which the pivot point comprises a hole in said cam through which a rod is inserted and said cam is rotatable about said rod.

6. A safety mechanism as claimed in claim 4 in which the second end of the cam is provided with a sloping portion over which the profiled end of the associated portion of rod passes as the cam moves between its first and its second position.

7. A safety mechanism as claimed in any one of claims 1 to 6 in which the slot in the cam extends generally towards the pivot point and is provided with a first and a second side, said first side being in communication with the feature on the drawer as the drawer is moved from its closed to its opened position until the second end of cam is inserted in said gap and thereafter being out of communication with said feature.

8. A safety mechanism as claimed in claim 7 in which the feature on the drawer passes over said first side as said drawer is moved from its opened position to its closed position and in which said second side is then in communication with said feature and moves with said feature for at least a portion of its travel thereby to pivot said cam about its pivot point and extract the second end of said cam from said gap.

9. A safety mechanism as claimed in anyone of the preceding claims in which a means is provided to resist movement of the cam.

10. A safety mechanism as claimed in any one of claims 2 to 9 in which the second endstop is provided with a stepped surface having two faces, the first of said faces being spaced from said first endstop by a predetermined amount which is greater than the overall length of the rod thereby to define a gap, and the second face being spaced from said first endstop by a predetermined amount which is substantially the same as the overall length of the rod.

11. A safety mechanism as claimed in claim 10 in which the second endstop is movable between a first position in which its first face confronts the first endstop and the rod is positioned therebetween and a second position in which said second face confronts said first endstop and the rod is positioned therebetween.

12. A safety mechanism substantially as herein described with reference to Figures 1 to 7 of the accompanying drawings.

13. A multi-drawer cabinet having a safety mechanism as claimed in any preceeding claim.

14. A multi-drawer cabinet substantially as described with reference to the accompanying drawings.